

National 5 Tutorials

Rules Of Arithmetic

Evaluating expressions involving numbers is one of the basic tasks in arithmetic. But if an expression is complicated then it may not be clear which part of it should be evaluated first, so some rules must be established both for positive and negative numbers.

Video tutorial 30 mins.

<http://www.mathtutor.ac.uk/arithmetic/rulesofarithmetic>

Fractions Basic Ideas

Fractions are ways of writing parts of whole numbers. This unit looks at the basic concept of fractions — what they are, what they look like, why we have them and how we use them.

Video tutorial 26 mins.

<http://www.mathtutor.ac.uk/arithmetic/fractionsbasicideas>

Fractions Adding And Subtracting

This unit covers how to add and subtract simple fractions, and how to add and subtract mixed fractions by turning them into improper fractions.

Video tutorial 22 mins.

<http://www.mathtutor.ac.uk/arithmetic/fractionsaddingandsubtracting>

Fractions Multiplying And Dividing

This unit describes how to multiply fractions, and how to divide fractions by turning the second fraction upside down.

Video tutorial 33 mins.

<http://www.mathtutor.ac.uk/arithmetic/fractionsmultiplyinganddividing>

Decimals

This unit discusses the meaning of decimals and how they are related to fractions. Included are rounding to given numbers of decimal places or significant figures. Irrational numbers are also briefly considered.

Video tutorial 44 mins.

<http://www.mathtutor.ac.uk/arithmetic/decimals>

Percentages

This unit looks at the meaning of percentages and how to carry out calculations involving percentages. The use of the percentage button on calculators is also explained.

Video tutorial 30 mins.

<http://www.mathtutor.ac.uk/arithmetic/percentages>

Mathematical Language

This introductory section provides useful background material on the importance of symbols in mathematical work. It describes conventions used by mathematicians, engineers, and scientists.

Video tutorial 22 mins.

<http://www.mathtutor.ac.uk/algebra/mathematicallanguage>

Trig ratios in a right-angled triangle

Knowledge of the trigonometric ratios of sine, cosine and tangent is vital in very many fields of engineering, science and maths. This unit introduces them and provides examples of how they can be used to solve problems.

Video tutorial 35 mins.

<http://www.mathtutor.ac.uk/trigonometry/trigratiosinarightangledtriangle>

Trig ratios of an angle of any size

Knowledge of the trigonometric ratios sine, cosine and tangent is vital in many fields of engineering, maths and science. This unit explains how the sine, cosine and tangent of an arbitrarily sized angle can be found.

Video tutorial 28 mins.

<http://www.mathtutor.ac.uk/trigonometry/trigratiosofanangleofanysize>

Triangle formulae

A common mathematical problem is to find the angles or lengths of the sides of a triangle when some, but not all, of these quantities are known. It is also useful to be able to calculate the area of a triangle from some of this information.

Video tutorial 40 mins.

<http://www.mathtutor.ac.uk/trigonometry/triangleformulae>

Introduction to vectors

A vector is a quantity that has both a magnitude (or size) and a direction. Both of these properties must be given in order to specify a vector completely. Adding and subtracting vectors and using them in geometry is described.

Video tutorial 33 mins.

http://www.mathtutor.ac.uk/geometry_vectors/introductiontovectors